

**THIS OPINION WAS NOT WRITTEN FOR PUBLICATION**

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 17

**UNITED STATES BOARD OF PATENT APPEALS  
AND INTERFERENCES**

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Ex parte WILLIAM B. CHAMBERLIN, III

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Appeal No. 97-0455<sup>1</sup>  
Application No. 08/344,043<sup>2</sup>

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ON BRIEF

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Before SCHAFER, LEE, and TORCZON, Administrative Patent Judges.

SCHAFER, Administrative Patent Judge.

**DECISION ON APPEAL**

Applicant seeks review under 35 U.S.C. § 134 of the final rejection of claims 1-41. Notice of Appeal (Paper 10).

**BACKGROUND**

***The claimed subject matter***

The subject matter of the invention involves lubricants suitable for fuel injected

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<sup>1</sup> Attorney docket no. 2658R-01.

<sup>2</sup> Application for patent filed 23 November 1994. According to appellants, the application on appeal is a continuation-in-part of application 08/067,780 filed 26 May 1993, now abandoned, which in turn is said to be a continuation-in-part of application 07/707,724, filed 30 May 1991, also abandoned. Application (Paper 1), p. 1.

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two-stroke cycle engines and a method of lubricating a particular type of these engines, crankcase-scavenged two-stroke cycle engines. Such engines were known in the art as of applicant's effective filing date. Applicant describes these engines as follows:

Direct fuel-injected crankcase-scavenged two-stroke cycle engines have been described in some detail on page 37 of the present application. These are engines in which the lubricant is not pre-mixed with the fuel . . . . The fuel is injected directly into the combustion chamber, rather than being drawn through the crankcase. The lubricant and air, on the other hand are drawn into the crankcase and are pumped or scavenged from there and ultimately pass into the combustion chamber. There they are compressed, and thereafter the fuel is injected. In the ordinary two-stroke cycle engine on the other hand, the fuel and lubricant are premixed, supplied to the crankcase, swept promptly into the combustion chamber, and consumed.

Response to Request for Additional Information (Paper 16), p. 13:

As set out in the claims, lubricant compositions require three components: (1) an oil of lubricating viscosity; (2) a piston scuffing preventing or reducing amount of the mixture of a phenol and a dispersant; and (3) an antioxidant. Bright stock may be included as an optional component in some embodiments. The lubricant must also be free of ash forming and phosphorous containing components. Applicant's specification indicates that the ashless dispersants include Mannich, amine, nitrogen-containing carboxylic, and ester dispersants. These dispersants may be post treated with boron compounds. Specification (Paper 1), p. 22, lines 19-25.

Claim 1 limits the phenol to either (1) an aminophenol or (2) the reaction product of a nitrophenol and an amino compound. The dispersant is limited to Mannich, amine, nitrogen-containing carboxylic, or ester dispersants. The antioxidant is limited to sulfur-containing organic, nitrogen-containing, or hindered phenol inhibitors. Bright stock, if present, is limited to no more than 3%. Claim 41 is essentially the same, limiting phenol to an aminophenol and the antioxidant to an aromatic amine.

Claim 21 is directed to the method of using the lubricant essentially as specified in claim 1 to lubricate a fuel-injected, crankcase-scavenged two-stroke cycle engine. There are two steps to the method: (1) supplying the lubricant to the crankcase of the engine and (2) operating the engine. The steps

themselves are, of course, the conventional steps for lubricating a typical internal combustion engine. The lubricants specified in claim 21 differ from the lubricants of claim 1 in that there is no limitation placed upon the amount of bright stock. However, dependent claims 35 and 36 limit the amount of bright stock. Claim 35 limits it to 0 to about 3%. Claim 36 requires that the lubricant be free of bright stock.

Claims 1, 41, 21, 35 and 36 are reproduced below:

1. A lubricant composition suitable for fuel injected two-stroke cycle engines, comprising:
  - at least one oil of lubricating viscosity;
  - an amount, sufficient to reduce or prevent piston scuffing, of a mixture of
    - (A) at least one phenol selected from
      - (A-1) an aminophenol and
      - (A-2) a reaction product of a nitrophenol and an amino compound; and
    - (B) at least one Mannich dispersant, amine dispersant, nitrogen-containing carboxylic dispersant, or ester dispersant;
  - said composition further comprising:
    - (C) an amount, sufficient to reduce degradation of the lubricant composition upon exposure to oxygen or to oxides of nitrogen, of a nitrogen-containing inhibitor, a hindered phenol inhibitor, or a sulfur-containing organic inhibitor;
  - said composition containing 0 to about 3 percent by weight bright stock;
  - provided said composition is substantially free from ash-forming components and from added phosphorus-containing components.
41. A lubricant composition suitable for fuel injected two-stroke cycle engines, comprising:
  - at least one oil of lubricating viscosity;
  - an amount, sufficient to reduce or prevent piston scuffing, of a mixture of
    - (A) at least one aminophenol and

- (B) at least one Mannich dispersant, amine dispersant, nitrogen-containing carboxylic dispersant, or ester dispersant; said composition further comprising:
    - (C) an amount, sufficient to reduce degradation of the lubricant composition upon exposure to oxygen or to oxides of nitrogen, of an aromatic amine inhibitor; said composition containing 0 to about 3 percent by weight bright stock; provided said composition is substantially free from ash-forming components and from added phosphorus-containing components.
- 21. A method of lubricating a direct fuel injected, crankcase-scavenged two-stroke cycle engine, comprising
  - (a) supplying to the crankcase of said engine a composition of at least one oil of lubricating viscosity; an amount, sufficient to reduce or prevent piston scuffing, of a mixture of
    - (A) at least one phenol selected from
      - (A-1) an aminophenol and
      - (A-2) a reaction product of a nitrophenol and an amino compound; and
    - (B) at least one Mannich dispersant, amine dispersant, nitrogen-containing carboxylic dispersant, or ester dispersant; said composition further comprising:
      - (C) an amount, sufficient to reduce degradation of the lubricant composition upon exposure to oxygen or to oxides of nitrogen, of a nitrogen-containing inhibitor, a hindered phenol inhibitor, or a sulfur-containing organic inhibitor; and
  - (b) operating the engine.
- 35. The method of claim 21 wherein the lubricating composition contains 0 to about 3 percent by weight bright stock.
- 36. The method of claim 21 wherein the lubricating composition is free of bright stock.

The rejection

The examiner rejected claims 1-41 under 35 U.S.C. § 103 as unpatentable over the combined teachings of the following references. Examiner's Answer (Paper 12), p. 3:

Davis ('757)                      U.S. Patent 4,231,757                      4 November 1980

Davis ('138)                      U.S. Patent 4,425,138                      10 January 1984

Smalheer, C.V. & Smith, R. Kennedy (Smalheer), Lubricant Additives 1-11 (The Lezius-Hiles Co. 1967).

The References

Davis 4,231,757

Davis 4,231,757 (Davis '757) relates to lubricants. The lubricant compositions are useful, inter alia, for crankcase lubricants for two-stroke cycle engines. Davis '757, 18:51-56. The lubricants include an oil of lubricating viscosity (Davis '757, 18:63 to 20:25) and the reaction product of a nitrophenol and an amino compound. Davis '757, 1:56 to 2:13. The patent further teaches that additional ingredients may be included in the lubricant:

The invention also contemplates the use of other additives in combination with the composition of this invention. Such additives include, for example, auxiliary detergents and dispersants of the ash-producing or ashless type, oxidation-inhibiting agents, pour point depressing agents, extreme pressure agents, color stabilizers and anti-foam agents. [Emphasis added.]

Davis '757, 20:26-32. More specifically, the patent teaches that the nitrophenol-amino reaction product may be combined with a Mannich dispersant (Davis '757, 22:18-25), amine dispersants (Davis '757, 22:7-13), nitrogen containing carboxylic dispersants (Davis '757, 22:7-10) or ester dispersants (Davis '757, 21:60-67). Davis '757 also teaches the inclusion of other ashless dispersants including ashless amino, carboxylic or ester dispersants. Davis '757, 21:60 to 22:10. Example B (Davis '757, 23:8-23) teaches an ashless, bright stock free, phosphorus-free lubricating composition made of the following components:

Base Oil 10W-40

Acrylate V.I. Improver

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Borated Succinic Acid/Polyamine Dispersant/Detergent

Sulfurized Hydrocarbon Anti-wear Agent

Phenolic Anti-oxidant

Carboxylic Acid Anti-rust Agent

Product of Example 3

Silicone Anti-foam Agent

The "[p]roduct of Example 3" is the reaction product of a nitrophenol and an amino compound (polyamine). Davis '757, 16:25-45. As can be seen from the above list, the lubricant contains no bright stock and is free of ash-forming and phosphorous-containing ingredients.

Davis, 4,425,138

Davis, 4,425,138 (Davis '138) also relates to a lubricant similar to that disclosed in Davis '757. The lubricant is taught to be useful in two-stroke cycle engines. Davis '138, 2:29-38. The patent also teaches that

[i]n some two-cycle engines the lubricating oil may be injected into the combustion chamber along with the fuel or into the fuel just prior to the time the fuel enters the combustion chamber. The two-cycle lubricants of this invention are intended for use in such two-cycle engines.

Davis '138, 18:53-58. The lubricants include an oil of lubricating viscosity (Davis '138, 3:1 to 4:19) and an amino phenol (Davis '138, 4:45 to 11:33). The '138 lubricant may also include:

Other additives such as auxiliary detergents and dispersants of the ash-producing or ashless type, anti-oxidants, coupling agents, pour point depressing agents, extreme pressure agents, color stabilizers and anti-foam agents . . . [Emphasis added.]

Davis '138, 17:28-33. Ashless dispersants are specifically recommended for use in two-stroke cycle engine lubricants. Davis '138 teaches:

Detergent-dispersants of ashless types and ash-producing metallic types are used to control piston ring sticking and promote general engine cleanliness. The heavier duty two-cycle lubricants require the use of suitable ashless dispersants because of the proneness of the reference engine to deposit induced preignition. Other

formulations use calcium, barium or magnesium sulfonates either singly, in combination with one another, or in combination with ashless dispersants.

Davis '138, 17:34-42. Bright stocks may be present in certain embodiments but are not required. Davis '138, 18:23-28. Bright stocks, when present, are taught to be present in two-cycle oil in amounts of about 3 to about 20%. Davis '138, 18:23-28. Polymeric viscosity improvers are specifically disclosed as replacements for bright stocks to improve lubrication, lubricant film strength and engine cleanliness. Davis '138, 17:45-48.

Smalheer

Smalheer presents a discussion of additives conventionally used in oil based lubricants. The publication specifically teaches amine, nitrogen-containing, carboxylic ester ashless dispersants (Smalheer, p. 5) and nitrogen-containing, hindered-phenol and sulfur-containing antioxidants including phenolic amines (Smalheer, p. 7).

The rejections

The examiner held that the claimed invention differed from the lubricants described in the Davis patents in two respects: (1) the specific ashless dispersant claimed and (2) the use of a nitrogen containing hindered phenol or a sulfur-containing antioxidant. The examiner found that Smalheer teaches that ashless dispersants and antioxidants specified in the claims were conventional lubricant additives. Based upon the combined disclosures of the references, the examiner concluded that it would have been obvious to use these conventional additives in the lubricant compositions disclosed in the Davis patents.

Applicant asserts that the examiner has not made out a prima facie case and that any prima facie case is overcome by the Eisenhower declaration submitted under 37 CFR § 1.132.

We affirm the examiner's rejection.

DISCUSSION

Grouping of the claims

Applicant requests independent consideration of four groups of claims. Appeal Brief (Paper 11), p. 3:

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Group I: claims 1-20

Group II: claim 41

Group III: claims 21-34 and 37-40

Group IV: claims 35 and 36

Pursuant to 37 CFR §1.192(c)(7) we shall decide this appeal on the basis of claims 1, 21, 35, 36 and 41.

Claims 1-20

Claim 1 requires the combination of (A) an oil of lubricating viscosity, (B) a mixture of either an aminophenol or the reaction product of a nitrophenol and an amino compound with a Mannich, amine, nitrogen containing carboxylic or ester dispersant, (C) an additive selected from a nitrogen containing, hindered phenol or a sulfur containing antioxidant. The lubricant may optionally include up to 3% bright stocks and must be substantially free of ash forming and phosphorous containing components.

Applicant directs our attention to two limitations of claim 1 which are allegedly not taught by the Davis references. Appeal Brief (Paper 11), p. 3. See 37 CFR § 1.192(c)(8)(iv)(requiring the appeal brief to identify the specific limitations not taught by the references.)

First, applicant argues that the Davis references do not teach or suggest lubricants containing little or no bright stock. Claim 1, however, permits up to "about 3%" bright stock. We further note Davis '138 teaches that bright stock may be present in "about 3 to about 20% of the total oil composition." Davis '138, 18:23-28. The lower limit of about 3% bright stock taught by Davis '138 overlaps applicant's upper limit of 3%. In view of this teaching the hypothetical person of ordinary skill in the art would recognize that about 3% bright stock could be used in the lubricants taught by Davis '138. Accordingly, where bright stock is present, the use of 3% would have been prima facie obvious.

We further note that the Davis patents teach that bright stocks are an optional ingredient and may be replaced by other viscosity improvers. Thus, Davis '138 teaches:

Lubricity agents such as synthetic polymers (e.g., polyisobutene having a number average molecular weight in the range of about 750 to about 15,000), as measured by vapor phase osmometry or gel permeation chromatography, polyol ether (e.g., poly(oxyethylene-oxypropylene)ethers) and ester oils (e.g., the ester

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oils described above) can also be used in the compositions of this invention. Natural oil fractions such as bright stocks (the relatively viscous products formed during conventional lubricating oil manufacture from petroleum) can also be used for this purpose. They are usually present in the two-cycle oil in the amount of about 3 to about 20% of the total oil composition.

Davis '138, 17:67 - 18:28. Davis '138 also teaches that

Polymeric VI [(Viscosity Index)] improvers have been and are being used as bright stock replacement in the hope of improving lubricant film strength and lubrication and improving engine cleanliness. [Bracketed material added.]

Davis '138, 17:45-48. Davis '757 gives an example of a lubricant which does not include bright stocks but uses an acrylate viscosity index improver. Davis '757, Example B, 23:8-23. In our view, the person of ordinary skill in the art would have recognized from the Davis patents that bright stocks are optional ingredients in the Davis lubricants. As noted by applicant "[a] feature which is optionally present may also be optionally absent." Response to Request for Additional Information (Paper 16), p.4.

Applicant argues that Davis '138

discloses 2-cycle lubricants. Those materials, however, are disclosed to contain 8 - 12 percent (e.g., 9.4%, col. 19, line 6 ) of the conventional bright stock. Bright stock in such amounts is excluded from the compositions of the present invention. There is no teaching in the Davis references that any such compositional limitations are desirable.

Appeal Brief ( Paper 11), p. 4.

Davis '757 and '138 each disclose a lubricant composition in which bright stock may or may not be present. We also note that the lubricant described in Example B of Davis '757 does not include bright stock. A reference is good for all it teaches to one of ordinary skill in the art, In re Fritch, 972 F.2d 1260, 1264, 23 USPQ2d 1780, 1782 (Fed. Cir. 1992), and is not limited to the particular invention described and to be protected by the patent, EWP Corp. v. Reliance Universal Inc., 755 F.2d 898, 907, 225 USPQ 20, 25, (Fed. Cir.1985), the specific examples disclosed, In re Fracalossi, 681 F.2d 792, 794 n.1, 215 USPQ 569, 570 n.1 (CCPA 1982); In re Lamberti, 545 F.2d 747, 750, 192 USPQ 278, 280 (CCPA 1976), or preferred embodiments. In re Mills, 470 F.2d 649, 651, 176 USPQ 196, 198 (CCPA 1972).

Accordingly, we find that Davis '757 and '138 teach lubricant compositions that are substantially free of bright stock.

As the second difference, applicant argues that the Davis patents teach formulations including ash forming and phosphorous containing materials and, therefore, the person of ordinary skill in the art would not be lead to a lubricant substantially free of these components. Appeal Brief (Paper 11), p. 4.

Again we note that the Davis patents, while indicating such components may be used, teaches they are optional components. Davis '757 specifically notes that the lubricant additives may contain "auxiliary detergents and dispersants of the ash-producing or ashless type . . . ." Davis '757, 20:26-30. Davis '138 similarly teaches the use of "auxiliary detergents and dispersants of the ash-producing or ashless type . . . ." Davis '138, 17:28-30. Davis '138 also specifically recommends the use of ashless dispersants with two-stroke cycle engines. Thus Davis '138 teaches that

heavier duty two-cycle lubricants require the use of suitable ashless dispersants because of the proneness of the reference engine to deposit induced preignition.

Davis '138, 17:36-39. Additionally, we note that Example B of Davis '757 is free of ash forming components. Davis '757 at 23:15-23. While applicant asserts that the listed borated succinic acid/polyamine dispersant is an ash-containing material (Appeal Brief (Paper 11), p. 4), this statement is not supported by any evidence and we give it little, if any weight. Estee Lauder Inc. v. L'Oreal, S.A., 129 F.3d 588, 593, 44 USPQ2d 1610, 1615 (Fed. Cir. 1997). Indeed, applicant's assertion is contrary to the record. Applicant's specification under the subtitle "(B) Ashless Dispersants" describes various ashless dispersants and states:

The dispersant includes nitrogen-containing carboxylic dispersants . . . . In one embodiment, the dispersants may be post-treated with such reagents as . . . boron compounds . . . ."

Specification (Paper 1), p. 22, lines 20-25. The succinic acid/polyamine dispersant of Example B is a "nitrogen-containing carboxylic dispersant." Additionally, Davis '757 characterizes "borated alkyl succinic acid/polyamine dispersant/detergents" as ashless dispersants. Davis '757, 21:60 - 22:17, particularly, 22:7-10. We find that Davis '757 and '138 teach lubricant compositions which are free of ash forming

components.

With respect to phosphorous containing components, applicant asserts, without any evidentiary support, that lubricants “often contain extreme pressure/antiwear agents which are normally phosphorous containing materials.” Appeal Brief (Paper 11), p. 4-5. We note that Example B of Davis ‘757 does not list any phosphorous containing ingredients. Davis ‘757, 23:10-23. Smalheer teaches that extreme pressure additives include

organic compounds that contain one or more elements or functions such as sulfur, halogen (principally chlorine), phosphorous, carboxyl, or carboxylate salt which can react chemically with the metal surface under conditions of boundary lubrication.

Smalheer, p. 9. Smalheer further teaches that extreme pressure additives in motor oils are also known in the industry as anti-wear and anti-scuffing agents. Smalheer, p. 10. The only anti-wear agent listed in Example B is a sulfurized hydrocarbon. Davis ‘757, 23:19. In view of these teachings, one having ordinary skill in having ordinary skill in the art would understand Davis’ Example B to be free of phosphorous containing components.

In view the combined teachings of the Davis patents and Smalheer, we conclude that the lubricant compositions of claim 1 would have been prima facie obvious.

#### Claim 41

Claim 41 is identical to claim 1 except it limits component (A) to an aminophenol and component (C) to an aromatic amine antioxidant. Davis '138 teaches the use of aminophenol additives . Davis '138, 4:44 to 11:33. And both Davis ‘757 and Davis ‘138 generally teach that antioxidants may be included in the disclosed lubricant compositions. Davis ‘757 specifically teaches the use of phenolic antioxidant in a crankcase lubricant. Davis ‘757, Example B, 23:9-23. Smalheer teaches that aromatic amine antioxidants are conventional lubricant additives . Smalheer, p. 7. One having ordinary skill in the art would have recognized that such conventional aromatic amine antioxidants would be useful as the antioxidants in the Davis lubricants. The inclusion of aromatic amines as antioxidants in the Davis lubricants would, therefore, have been prima facie obvious.

Claims 21-34 and 37-40

Claim 21 to 40 are directed to a method for lubricating a direct fuel injected, crankcase scavenged two-stroke cycle engine. Applicant argues that the cited references do not direct one to use the disclosed compositions for lubrication of a directed fuel injected, crankcase-scavenged two-cycle stroke engine. Appeal Brief (Paper 11), p.5. As we indicated above, such engines were known in the art. Applicant's specification notes that direct fuel injected crankcase-scavenged two-stroke cycle engines are "those in which the lubricant is not pre-mixed with the fuel." Specification (Paper 1), p. 37. Davis '757 and '138 teach that the disclosed lubricants are useful in two-stroke cycle engines. Davis '757, 18:51-56; Davis '138, 18:53-58). Davis '138 also teaches

[i]n some two-cycle engines the lubricating oil may be injected into the combustion chamber along with the fuel or into the fuel just prior to the time the fuel enters the combustion chamber. The two-cycle lubricants of this invention are intended for use in such two-cycle engines.

Davis '138, 18:53-58. We find that the lack of premixing of lubricant and fuel and the separate introduction of the fuel and lubricant would suggest the use of the Davis lubricants in direct fuel injected crankcase-scavenged two-stroke cycle engines to the person of ordinary skill in the two-stroke cycle engine arts. The use of the Davis lubricants in this known type of two-cycle engine would have been prima facie obvious.

Applicant argues that, unlike the claimed lubricants, the two-stroke cycle engine lubricants disclosed by Davis '757 and '138 would be unable to withstand the harsh environment of the crankcase. Appeal Brief (Paper 11), p. 5. No objective evidence has been provided that supports this position. The argument of counsel unsupported by evidence in the record is of little weight in deciding patentability. Estee Lauder, 129 F.3d at 593, 44 USPQ2d at 1615 (Fed. Cir. 1997). In any event, for the reasons stated above, we hold that the Davis patents suggest the use of ashless lubricants. We note particularly the teaching in Davis '138 that ashless lubricants should be used with "heavier duty two-cycle lubricants" to avoid "deposit induced preignition." Davis '138, 17:34-42 and Davis '757, 23:10-23 (Example B) .

Claims 35 and 36

Claims 35 and 36 depend from claim 21 and add the limitations that the lubricant contains little (0 to 3%) or no bright stock, respectively. Applicant argues that these limitations further distinguish the claimed method of lubricating a direct fuel injected, crankcase-scavenged two-stroke cycle engine since the prior art does not teach such a limitation.

We have already found that the Davis '757 and '138 teach lubricants which contain no bright stock. Davis '138 teaches that bright stock may be optionally included amounts of about 3% to about 20%. The lower limit of about 3% meets the limitation of claim 35. As we indicated above Davis '757, Example B, describes a lubricant which does not contain bright stock. Davis '138 also teaches that polymeric viscosity improvers may be substituted for bright stocks to improve lubrication, lubricant film strength and engine cleanliness. Davis '138, 17:45-48. Again, we read Davis '138 as suggesting the use of the disclosed lubricants in direct fuel injected, crankcase-scavenged two-stroke cycle engine to the person of ordinary skill in the art. Davis '138, 18:53-58. It would have been prima facie obvious to use low bright stock or bright stock-free lubricants in the two-stroke cycle engines of the type specified in claims 35 and 36.

Secondary Considerations

Applicant argues that the declaration of Karl Eisenhower (Eisenhower declaration (Paper 6)) under 37 C.F.R. § 1.132 provides objective evidence of nonobviousness. Eisenhower is said to be an employee of Orbital Engine Company (Australia) Pty Ltd. and has been involved in the development of direct fuel injected, crankcase scavenged, two-stroke cycle engines. Applicant asserts that the declaration shows (1) unexpected results (unexpectedly improved performance), (2) commercial success, (3) a long felt but unsolved need, and (4) failure by others. Appeal Brief (Paper 11) , p. 7-8. We must consider such secondary evidence in evaluating obviousness under 35 U.S.C. § 103. In re Beattie, 974 F.2d 1309, 1313, 24 USPQ2d 1040, 1042-43 (Fed. Cir. 1992).

Unexpected results

An applicant bears the burden of proving unexpectedly good results. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). When unexpected results are used as evidence of

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non-obviousness, the results must be shown to be unexpected compared with the closest prior art. In re Baxter Travenol Labs, 952 F.2d 388, 392, 21 USPQ2d 1281, 1285 (Fed. Cir. 1991); In re De Blauwe, 736 F.2d 699, 705, 222 USPQ 191, 196, (Fed. Cir. 1984). The Eisenhower declaration fails to provide a comparison with the closest prior art of record, the Davis patents. The only comparative information provided by Eisenhower is the statement that lubricants from four other major lubricant and additive suppliers were evaluated and only lubricants provided by applicant's assignee (Lubrizol) were satisfactory. Eisenhower declaration (Paper 6), p. 2. The compositions of the lubricants which were said to be evaluated are not disclosed. Thus, it is not possible for us to evaluate whether a comparison has been made with the closest prior art. Applicant has failed to meet his burden of proving unexpected results with the closest prior art.

Commercial Success

It is axiomatic that in order to prove commercial success, there must be some proof of the commercialization of the invention. "[T]he PTO must rely upon the applicant to provide hard evidence of commercial success." In re Huang, 100 F.3d 135, 139-140, 40 USPQ2d 1685, 1689 (Fed. Cir. 1996). Applicant has not met this burden. No evidence has been presented of any commercialization of the subject matter of the claimed invention. The declaration presents only the speculation that the use of the lubricants will allow "Orbital technology to progress towards high volume automotive applications." Eisenhower declaration ( Paper 6), p. 3. The declaration provides no evidence that either the claimed lubricants or the Orbital engines have been commercialized.

Long felt but unsolved need - failure by others

The nature of a problem "which persisted in the art", and the inventor's solution, are factors to be considered in determining whether the invention would have been obvious to a person of ordinary skill in that art. Northern Telecom Inc. v. Datapoint Corp., 908 F.2d 931, 935, 15 USPQ2d 1321, 1324 (Fed. Cir. 1990); In re Rothermel, 278 F.2d 393, 397, 125 USPQ 328, 332 (CCPA 1960). Establishing such a long felt need requires objective evidence that the invention has provided a long-awaited, widely accepted, and promptly adopted solution to a problem extant in the art, or that others, had tried but failed

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to solve that problem. In re Mixon, 470 F.2d 1374, 1377, 176 USPQ 296, 299 (CCPA 1973); In re Allen, 324 F.2d 993, 997, 139 USPQ 492, 495 (CCPA 1963). The Eisenhower declaration does not establish the existence of a problem which persisted in the art for a long period without solution. Applicant argues that “neither Orbital nor four other major lubricant and additive suppliers have been able to supply a formulation that is satisfactory in simultaneously minimizing exhaust valve fouling and providing acceptable overall engine lubrication.” Appeal Brief (Paper 11), p. 8. The Eisenhower declaration does not indicate that Orbital tried to solve the problems. The declaration indicates only that it worked with Lubrizol to do so. Nor does the declaration indicate that the “four other major lubricant and additive suppliers” had attempted to address the specific problems. It indicates only that “candidate lubricants” were examined and does not state that the candidate lubricants were attempts by the suppliers to address the specific problems.

In any event, it appears that the lubricants disclosed by the Davis patents, particularly the ashless lubricants, provide a solution to the problem. Eisenhower identifies three problems associated with fuel injected, crankcase scavenged, two-stroke cycle engines: (1) fouling of the exhaust valves; (2) plugging of catalytic converters; and (3) decomposition of the lubricant. Davis specifically recommends ashless lubricants in two-stroke cycle engines to avoid deposits. Davis ‘138, 17:34-42.

Lastly, the declaration does not indicate that those allegedly attempting to solve the problem were aware of the most relevant prior art, the Davis patents. In re Sneed, 710 F.2d 1544, 1549, 218 USPQ 385, 389 (Fed. Cir. 1983).

The Eisenhower declaration provides insufficient evidence that a long felt but unsolved need existed in the art that was solved by applicants claimed lubricants.

#### DECISION

We affirm the examiner's rejection of claims 1-41 under 35 U.S.C. § 103.

No time for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

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AFFIRMED

RICHARD E. SCHAFER	)	
Administrative Patent Judge	)	
	)	
	)	
JAMESON LEE	)	BOARD OF
Administrative Patent Judge	)	PATENT
	)	APPEALS AND
	)	INTERFERENCES
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